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Applicants: Kyoichi Tomita, et al. Page 2



Amendments to the Claims: A)

1. (currently amended) A method for producing an onium salt derivative, characterized by comprising reacting an onium salt derivative which has a halide Q as an anion moiety and which is represented by any one of formulas (1) through (4):

wherein each of R1, R2, R3, and R5 represents an alkyl group, a cycloalkyl group, a perfluoroalkyl group, an aromatic organic group, an aralkyl group, or a phenacyl group, each of these groups having ≤25 carbon atoms and being optionally substituted; one or both of the pairs of R1 and R3, and R2 and R5 may together form a divalent organic group; R4 represents a C≤20 divalent organic group; and Q represents a halide anion,

with an ester compound which has an alkyl group R, and which is represented by any one of formulas (5) through (7):

wherein R, represents an alkyl group, a cycloalkyl group, a perfluoroalkyl group, an aromatic organic group, or an aralkyl group, each of these groups having ≤25 carbon atoms and being optionally substituted; R, represents an alkyl group, having ≤5 carbon atoms and being optionally substituted; and each of R₈ and R₉ represents an alkyl group, a cycloalkyl group, a perfluoroalkyl group, or an aralkyl group, each of these groups having ≤10 carbon atoms and being optionally substituted.

to thereby form R₂Q through nucleophilic attack by the halide Q on the alkyl group R7 of the ester comound, and to also produce an onium salt derivative which is formed of an anion represented by an any one of R₈SO₂O-, PO₈R₈PO-PO₂R₈R₉-, and R₈SO₄- derived from the ester comound compound and an onium cation derived from the onium salt, an onium salt derivative represented by one of formulas (8) through (19).

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- (original) A method for producing an onium salt derivative according to claim 1, wherein reaction is carried out while removing generated R₂Q from the reaction system.
- (previously amended) A method for producing an onlum salt derivative according to claim 1 or 3, wherein the reaction is carried out in a solvent.
 - 5. (cancelled)

2. (cancelled)

- 6. (cancelled)
- 7. (cancelled)
- ,. (cameones)
- 8. (cancelled)
- 9. (cancelled)
- 10. (cancelled)
- 11. (previously amended) An onium compound which has a phosphate derivative as an anion moiety and which is represented by any one of formulas (12) through (15):

wherein each of R_1 , R_2 , R_3 , and R_3 represents an alkyl group, a cycloalkyl group, an arministic organic group, an aralkyl group, or a phenacyl group, each of these groups having ≤ 25 carbon atoms and being optionally substituted; one or both of the pairs of R_1 and R_3 , and R_2 and R_3 may together form a divalent organic group; R_4 represents a $C \leq 20$ divalent organic group; and each of R_1 and R_2 represents an alkyl group, a cycloalkyl group, a perfluoroalkyl group, or an aralkyl group, each of these groups having ≤ 10 carbon atoms and being optionally substituted.

12. (currently amended) A method for producing an onium salt derivative, characterized by comprising reacting an onium salt which has a halide Q as an anion moiety and which is represented by any one of the following formulas (1) through (4):

wherein each of R_1 , R_2 , R_3 , and R_3 represents an alkyl group, a cycloalkyl group, a perfluoroalkyl group, an aromatic organic group, an aralkyl group, or a phenacyl group, each of these groups having ≤ 25 carbon atoms and being optionally substituted; one or both of the pairs of R_1 and R_2 , and R_3 may together form a divalent organic group; R_4 represents a $C \leq 20$ divalent organic group; and R_3 represents a halide anion or a $C \leq 10$ carboxylate anion,

with an ester compound which has an alkyl group R_7 and which is represented by any one of formulas (6) or (7):

wherein R_3 represents an alkyl group, having ≤ 5 carbon atoms and being optionally substituted; and each of R_4 , and R_5 represents an alkyl group, a cycloalkyl group, or an aralkyl group, each of these groups having ≤ 10 carbon atoms and being optionally substituted;

to thereby form R₂Q through nucleophilic attack by the halide Q on the alkyl group R7 of the ester comound, and to also produce an onium salt derivative which is formed of an anion represented by an one of R₂SO₂O₂ PO₂R₂R₂P PO₂R₃R₃ and or R₄SO₄ derived from the ester comound compound and an onium cation derived from the onium salt ran; and reacting the onium salt derivative and with a sulfonic acid derivative represented by formula (24):

wherein R_{13} represents an alkyl group, a cycloalkyl group, a perfluoroalkyl group, an aromatic organic group, or an aralkyl group, each of these groups having ≤ 25 carbon atoms and being optionally substituted; and Y represents a hydrogen atom, an alkali metal, or ammonium,

to thereby cause salt exchange and yield an onium salt derivative represented by one of formulas (25) through (28).

13. (previously submitted) A method for producing an onium salt derivative according to claim 12, wherein each of R2, R2 and R2 is a methyl group or an ethyl group.